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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/009,488      | 12/13/2001  | Rikiya Yamashita     | DAIN:658            | 4510             |

7590                    06/02/2003  
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|                 |
|-----------------|
| EXAMINER        |
| YUAN, DAH WEI D |

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
| 1745     | 3            |

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                             |                        |                     |
|-----------------------------|------------------------|---------------------|
| <b>Offic Action Summary</b> | <b>Application N .</b> | <b>Applicant(s)</b> |
|                             | 10/009,488             | YAMASHITA ET AL.    |
|                             | <b>Examiner</b>        | <b>Art Unit</b>     |
|                             | Dah-Wei D. Yuan        | 1745                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.  
**Disposition of Claims**  
 4) Claim(s) 1-12 is/are pending in the application.  
   4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-12 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 13 December 2001 is/are: a) accepted or b) objected to by the Examiner.  
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.  
   If approved, corrected drawings are required in reply to this Office action.  
 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
   1. Certified copies of the priority documents have been received.  
   2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
   3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
   \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
   a) The translation of the foreign language provisional application has been received.  
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.<br> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)     |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.<br> | 6) <input type="checkbox"/> Other: _____  |

**BATTERY, TAB OF BATTERY AND METHOD OF MANUFACTURE THEREOF**

Examiner: Yuan      S.N. 10/009,488      Art Unit: 1745      May 28, 2003

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show corrosion-resistant layers, 12a and 12b, as described in the specification. See page 13, lines 25-29. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2,4-9,11 are rejected under 35 U.S.C. 102(a) as being anticipated by Yamashita et al. (JP 2001-059187).

With respect to claim 1, Yamashita et al. teach a polymer battery comprising a sheathing object (C) (a battery module) and metal tabs (T), which extend outside from the sheathing object. See Figure 3. The periphery section of the sheathing object (C) is shut by heat sealing the

innermost resin layer along with the metal tab. The metal tab is made of metal such as aluminum or nickel. Yamashita et al. also teach various chemical processes, including phosphate coat processing, chromic acid coat processing and fluoride coat processing can improve resistance of the aluminum metal. See Paragraphs 9,17,18; Claim 6.

With respect to claims 2 and 4, Yamashita et al. teach the acid resistance of the aluminum metal can be improved by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Claim 3.

With respect to claim 5, the sheathing object further comprises a base material layer (11), a barrier layer (12), an interlayer (13), an innermost layer (14) and adhesive layers (15). See Figure 2. The barrier layer is made of a metallic foil, in which a first surface is chemically treated by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See paragraph 13; claim 3.

With respect to claim 6, the second surface of the barrier layer is also chemically treated as described above. The resulting corrosion-resistant layer is disposed between the adhesive layer (15) and the barrier layer (12). See Figure 2.

With respect to claim 7, the innermost resin layer is considered as a heat adhesive that wound around the tabs. See paragraph 17.

With respect to claim 8, metal tabs (7) are extended outside the battery through the heat sealed peripheral part of the innermost layer as describe above. The acid resistance of the metal tab can be improved by at least one solution selected from the groups consisting of phosphate

treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Paragraphs 9,17,19; Claim 6.

With respect to claims 9 and 11, Yamashita et al. teach the acid resistance of the aluminum metal can be improved by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Claim 3.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said priority papers (JP 2000-117836, 2001-9706) has not been made of record in accordance with 37 CFR 1.55. See MPEP §201.15.

4. Claims 1,2,7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahata et al. (JP 10-312788).

With respect to claims 1 and 8, Kahata et al. teach a battery comprising a sheathing material (6) and a positive electrode lead (5) (tab), which is extended outside from the battery. See Figure 2. The sheathing material comprises polyester film/aluminum foil/polyester film/ionomer resin layers. The suitable electrode lead includes aluminum, nickel, titanium, copper and stainless steel. The peripheral part of the electrode lead is heat sealed by the innermost layer in the sheathing material. A surface agent (4) is applied to the surface of the electrode lead (5), particularly the area to be in contact with the seal portion of the sheathing material. The agent can be a chromate or a phosphoric acid chromate, which acts as a corrosion-resistant layer. See Abstract; Claims 1-3,5,6; Paragraphs 9,21.

With respect to claims 2 and 9, the surface of the electrode lead is treated with a phosphoric acid chromate, which is interpreted as a phosphate chromate compound. See Abstract.

With respect to claim 7, the innermost ionomer resin layer is considered as a heat adhesive that wound around the tabs. See Paragraph 17.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (JP 2001-059187) as applied to claims 1,2,4-9,11 above, and further in view of Affinito (US 5,662,746).

Yamashita et al. disclose a polymer battery comprising a metal tab as described above in Paragraph 3. However, Yamashita et al. do not discuss the use of a phenolic resin as a corrosion-resistant layer on the tab. Affinito teaches the treatment of conversion-coated metal with an aqueous solution comprising a phenolic resin and a Group IVA metal ion, namely zirconium, titanium, hafnium, and mixtures thereof. The suitable metal substrates include steel, aluminum, zinc, and their alloys. The coating can protect the metal surface from corrosion and for aesthetic

reasons. See Column 1, Lines 7-19. Therefore, it would have been obvious to one of ordinary skill in the art to use a resin containing a phenolic resin and a metal of zirconium, titanium or hafnium on the metal tab of Yamashita et al., because Affinito teaches the phenolic resin coating can protect the metal surface from corrosion.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (US 5,585,206) in view of Yamashita et al. (JP 2001-059187).

Morris teaches the formation of battery tabs by slitting a portion of current collector (metal sheet). See Abstract. However, Morris does not teach the use of a chemical conversion treatment on the resulting battery tabs. Yamashita et al. teach the treatment of metal tabs including the steps of (1) degreasing with an acid or alkali solutions, (2) applying at least one solution selected from the groups consisting of phosphate treatment, chromic acid treatment, fluoride treatment and triazine thiol treatment and (3) drying the solution to form a corrosion-resistant layer. See Paragraphs 9,17,19; Claim 6. Therefore, it would have been obvious to one of ordinary skill in the art to apply the surface treatment procedures described above on the metal tab of Morris, because Yamashita et al. teach the corrosion resistance of the resulting battery tab can be improved.

8. Claims 3,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahata et al. (JP 10-312788) as applied to claims 1,2,7-9 above, and further in view of Affinito (US 5,662,746).

Kahata et al. disclose a battery comprising a metal tab, on which a surface agent is applied as described above in Paragraph 4. However, Kahata et al. do not discuss the use of a phenolic resin as a corrosion-resistant layer on the tab. Affinito teaches the treatment of conversion-coated metal with an aqueous solution comprising a phenolic resin and a Group IVA metal ion, namely zirconium, titanium, hafnium, and mixtures thereof. The suitable metal substrates include steel, aluminum, zinc, and their alloys. The coating can protect the metal surface from corrosion and for aesthetic reasons. See Column 1, Lines 7-19. Therefore, it would have been obvious to one of ordinary skill in the art to use a resin containing a phenolic resin and a metal of zirconium, titanium or hafnium on the metal tab of Kahata et al., because Affinito teaches the phenolic resin coating can protect the metal surface from corrosion.

9. Claims 4,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahata et al. (JP 10-312788) as applied to claims 1,2,7-9 above, and further in view of Mori (US 6,011,135).

Kahata et al. disclose a battery comprising a metal tab, on which a surface agent is applied as described above in Paragraph 4. However, Kahata et al. do not discuss the use of a triazine thiol treatment on the tab. Mori teaches the treatment of metal such as copper and aluminum by dipping the metal in an aqueous solution or organic solution of triazine thiol. Mori discloses the corrosion resistance of the resulting metal is improved. See Column 6, Lines 12-15; Column 14, Lines 20-24. Therefore, it would have been obvious to one of ordinary skill in the art to use a triazine thiol treatment on the metal tab of Kahata et al., because Mori teaches the triazine thiol coating can improve the corrosion resistance of the metal.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mitsui et al. (JP 2001-084993) teach the use of a chemical treatment on the metal tab of a battery. Fujimori et al. (JP 2001-155713) teach a surface treatment on the aluminum tab in a battery to prevent deterioration of the adhesion strength between the tab and the sheathing material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan  
May 29, 2003

